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REMARKS

The present invention is directed to a crosspoint switch which has a substantially reduced power requirements from prior art crosspoint switches. The reduced power requirements are obtained by driving both the input buses to the crosspoints and the output buses from the crosspoints at low swing. In certain embodiments of the invention such as illustrated in Figure 20 of the present application, a clocked regenerative amplifier 119 in the crosspoint enables sensing of the very low swing signal on the input bus. A low swing driver 223 repeats the sensed signal on the output bus. This more complex crosspoint circuit enables low swing drive of both the input buses and the output buses for a substantial reduction in power requirements. It is counterintuitive that the more complex, active amplifier and driver circuits would result in such a power requirement reduction.

Claim 1 has been amended to incorporate the limitation of claim 2 that each crosspoint comprises an amplifier. Claim 2 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Mu et al., patent 6,490,213, in view of Sherman, patent 6,141,765. That rejection is respectfully traversed and reconsideration is requested.

Regarding claim 2, the Examiner notes that "Mu et al. teaches the crosspoint switch comprises an amplifiers (col. 10 line 45) and the amplifier is clocked (col. 13 lines 24-26)." (Page 4 of the Office Action) The Examiner may be correct that the crosspoint switch comprises amplifiers, but not that each crosspoint comprises an amplifier as claimed. Specifically, the sense amplifier 480 referenced by the Examiner at column 10, line 45 is an output amplifier that senses the signals on the output bus 402, 403. That amplifier might be compared to the receive amplifiers 207, 208 in Fig. 17 of the present application. It is not within the crosspoint between the input line 410 and the output lines 402, 403 as would be required by claim 2, now claim 1. Thus, there is no suggestion in Mu et al. that crosspoints, as opposed to the overall crosspoint switch, include amplifiers.

Claim 10 was rejected under 35 U.S.C. 103(a) as being unpatentable over Mu et al., patent 6,490,213, in view of Sherman, patent 6,141,765, in view of Karp, patent 5,469,154 and

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further in view of Krishnamurthy et al., patent 6,181,166. That rejection is respectfully traversed and reconsideration is requested.

The Examiner first states that Mu et al. teaches a plurality of low swing drivers which drive signals to the input buses. To the contrary, Mu et al. receives a full voltage data input 410 at each crosspoint. See the data signal in Fig. 8. The Examiner correctly notes that Mu et al. is "silent on teaching each crosspoint comprising an amplifier which amplifies a signal on an input bus and a low swing driver which drives a low swing signal on an output bus." The Examiner then cites Karp as teaching "crossbar switches (col. 2 lines 41-42) having amplifiers in the input and output stage of the crossbar switch (figure 1)." However, amplifiers at input and output stages of a crossbar switch teach nothing toward having amplifiers at the crosspoints of that switch. The Examiner then acknowledges that Karp is "silent on teaching low swing driver which drives a low swing signal on an output bus." For a low swing driver, the Examiner then cites Krishnamurthy et al. (col. 5 lines 35-40). However, Krishnamurthy et al. does not relate to a crosspoint switch. Thus, with respect to claim 10, even with the combination of four references, there is no teaching of an amplifier at a crosspoint of a crosspoint switch.

Claim 13 has been amended to include the limitation of amplifying at the crosspoints, incorporating a limitation of dependent claim 14. Again, claim 14 was rejected with a statement that "Mu et al. in an art related crossbar switch teaches the sensing of a signal on the buses using a clocked amplifier (col. 13 lines 24-26)." Again, the amplifier of Mu et al. amplifies the signal on the output bus; Mu et al. provides no teaching of an amplifier at the crosspoint.

Claim 20 similarly recites amplifiers at the crosspoints and was rejected for the same reasons as claim 10. The discussion above with respect to claim 10 applies to claim 20 as well.

Claim 21 has been amended to recite the limitation of amplifying at the crosspoint means. Claim 21 was rejected for the same reasons as claim 10 and is patentable for the reasons discussed above with respect to claim 10.

The remaining claims are dependent claims and are allowable for at least the reasons presented with respect to their base claims.


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CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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